CONTENTS

Proceedings American Concrete Institute
VOLUME 83 1986

January-February 1986 JOURNAL

3 **Cracking of concrete members in direct tension,** by ACI Committee 224

14 **Design trends for concrete bridge piers,** by R. W. Poston, M. Diaz, and J. E. Breen

21 **Stress-strain relationship for reinforced concrete in tension,** by Domingo J. Carreira and Kuang-Han Chu

29 **Ultimate flexural capacity of fully prestressed, partially prestressed, and nonprestressed arbitrary concrete sections under symmetric bending,** by Troels Brøndum-Nielsen

36 **Staggered shear design of simply supported concrete beams,** by Peter Marti

43 **Serviceability criteria in prestressed concrete bridges,** by Andrzej S. Nowak and Hid N. Grouni

50 **Bond in reinforced concrete: Behavior and design criteria,** by Emory L. Kemp

58 **Seismic design of concrete masonry shearwalls,** by M. J. N. Priestley

69 **Seismic behavior of lightweight and normal weight concrete columns,** by B. G. Rabbat, J. I. Daniel, T. L. Weinmann, and N. W. Hanson

80 **Effect of temperature on the properties of superplasticized concrete,** by Y. Yamamoto and S. Kobayashi

88 **Compressive strength of concrete masonry prisms,** by Tariq S. Cheema and Richard E. Klingner

98 **Bond of reinforcement to superplasticized concrete,** by Barie B. Brettmann, David Darwin, and Rex C. Donahey

106 **Strain rate-dependent interaction diagrams for reinforced concrete sections,** by Parviz Soroushian and Kienuwa Obaseki

117 **Properties of steel fiber reinforced concrete subjected to impact loading,** by V. S. Gopalaratnam and S. P. Shah

127 **Flexural capacity of reinforced masonry members,** by G. T. Suter and G. A. Fenton

137 **Reinforced concrete members subject to combined biaxial bending and tension,** by Cheng-Tzu Thomas Hsu

145 **Reinforced concrete T-beams in torsion and bending,** by P. D. Zararis and G. Gr. Penelis

156 **Strength of concrete beams and pipes at first crack—A strain limit design method,** by P. Aagren and N. L. Harrison

175 **Abstracts**
Composite concrete and steel high-pressure vessels for general use, ACI-ASME Committee 361

March-April 1986 JOURNAL

191 **The moment-curvature relationship of reinforced concrete members,** by Domingo J. Carreira and Kuang-Han Chu

199 **A point source-point receiver, pulse-echo technique for flaw detection in concrete,** by Nicholas J. Carino, Mary Sansalone, and Nelson N. Hsu

209 **Serviceability limit state analysis of cracked, polygonal concrete sections under biaxial or symmetric bending,** by Troels Brøndum-Nielsen

219 **The modified compression-field theory for reinforced concrete elements subjected to shear,** by Frank J. Vecchio and Michael P. Collins

232 **Concrete reinforced with collated steel fibers: Influence of separation,** by Graciela Giaccio, Alberto Giovambattista, and Raúl Zerbino

236 **Determining time dependent losses of prestress with due consideration of aging coefficient and percentage of steel,** by T. K. Bandyopadhyay and B. Sengupta

244 **Elastic compatibility and the behavior of concrete,** by T. W. Bremner and T. A. Holm

251 **Dynamic constitutive behavior of concrete,** by Parviz Soroushian, Ki-Bong Choi, and Abdulaziz Alhamad

260 **Size effect in shear failure of prestressed concrete beams,** by Zdeněk P. Bažant and Zhiping Cao

269 **Estimation of slab deflections in flat plate buildings,** by B. Vijaya Rangan

274 **A critique of the special provisions for seismic design of the building code requirements for reinforced concrete (ACI 318-83),** by T. Paulay

284 **Shear and flexural behavior of brick-aggregate concrete beams without web reinforcement,** by Ali A. Akhtaruzzaman and Abul Hasnat

290 **Shear capacity of reinforced concrete beams using high-strength concrete,** by Ashraf H. Elzanaty, Arthur H. Nilson, and Floyd O. Slate

297 **Shear capacity of reinforced high-strength concrete beams,** by Shuaib H. Ahmad, A. R. Khaloo, and A. Poveda

306 **Shear design and analysis of low-rise structural walls,** by S. T. Mau and Thomas T. C. Hsu

328 **Abstracts**
Fly ash, silica fume, slag, and natural pozzolans in concrete, SP-91

May-June 1986 JOURNAL

355 **Stress analysis for cracked reinforced concrete sections under symmetric bending in the serviceability limit state,** by Troels Brøndum-Nielsen

359 **Shear capacity of prestressed concrete beams using high-strength concrete,** by Ashraf H. Elzanaty, Arthur H. Nilson, and Floyd O. Slate

369 **Size effect in brittle failure of unreinforced pipes,** by Zdeněk P. Bažant and Zhiping Cao

374 **Freeze-thaw durability of fiber reinforced concrete,** by P. N. Balaguru and V. Ramakrishnan

383 **Making the most of concrete strength test results,** by J. Bruce Tait

389 **Flexural behavior of confined concrete columns,** by Shamim A. Sheikh and C. C. Yeh

405 **Behavior at cryogenic temperatures of steel for concrete reinforcement,** by M. Elices, H. Corres, and J. Planas

412 **Beam bar anchorage in exterior column-beam connections,** by T. Ueda, I. Lin, and N. M. Hawkins

423 **Torsion, bending, and shear in prestressed concrete beams containing steel fibers,** by R. Narayanan and A. S. Kareem-Palanjian

432 **Stress relaxation: Comparison of measured and computed values,** by D. Pirtz, K. Thomas, and P. J. M. Monteiro

438 **Design friction loads for concrete silos,** by Demetres Briassoulis

446 **Cryogenic insulating concrete—Cement-based concrete with polystyrene beads,** by C. L. Cheng and M. K. Lee

455 **Guide for making a condition survey of concrete pavements,** by ACI Committee 201

532 **Abstracts**
Forming economical concrete buildings, SP-90

July-August 1986 JOURNAL

547 **Serviceability limit state analysis of cracked, partially prestressed, or reinforced concrete sections under symmetric bending,** by Troels Brøndum-Nielsen

553 **Confined compression tests of cement paste and concrete up to 300 ksi,** by Zdeněk P. Bažant, Finley C. Bishop, and Ta-Peng Chang

561 **Effect of hyperstatic prestressing moments and the carrying capacity of continuous beams,** by Alfons Huber

567 **Ductility of infilled frames,** by P. Govindan, M. Lakshmipathy, and A. R. Santhakumar

577 **Moment redistribution in reinforced concrete frames,** by Y. L. Mo

588 **Temperature distributions and stresses in concrete bridges,** by D. S. Prakash Rao

597 **Study of the interface strength in steel fiber-reinforced cement-based composites,** by Sun Wei, James A. Mandel, and Samir Said

606 **Mechanical properties of high-strength lightweight concrete,** by Floyd O. Slate, Arthur H. Nilson, and Salvador Martinez

614 **Tests of reinforced concrete deep beams,** by David M. Rogowsky, James G. MacGregor, and See Y. Ong

624 **Shear strength of steel fiber reinforced concrete beams,** by A. K. Sharma

629 **The Carlson R-C (reinforced concrete) meter,** by Dale E. Berner and Roy W. Carlson

633 **A novel P-Delta method for reinforced concrete frames designed by LRFD approaches,** by H. Scholz

642 **Analysis of dowel bars acting against concrete core,** by Parviz Soroushian, Kienuwa Obaseki, Maximo C. Rojas, and Jongsung Sim

650 **Effect of curing method and final moisture condition on compressive strength of concrete,** by Sandor Popovics

658 **Analysis of cracking due to restrained volume change in reinforced concrete members,** by K. S. Stephen Tam and Andrew Scanlon

668 **Creep of concrete containing fly ash and superplasticizer at different stress/strength ratios,** by K. W. Nasser and A. A. Al-Manaseer

674 **Marginal materials in roller compacted concrete for pavement construction,** by M. N. Haque and M. A. Ward

680 **Design of transverse reinforcement in flanges of T-beams,** by A. Ghani Razaqpur and Amin Ghali

705 **Abstracts**
Evaluation and repair of fire damage to concrete, SP-92

September-October 1986 JOURNAL

719 **Creep deflections in slab buildings and forces in shores during construction,** by Manuel Aguinaga-Zapata and Zdeněk P. Bažant

727 **Behavior of prestressed lightweight concrete subjected to high-intensity cyclic stress at cryogenic temperatures,** by D. E. Berner, M. Polivka, B. C. Gerwick, Jr., and D. Pirtz

737 **Deflection of two-way slabs subjected to restrained volume change and transverse loads,** by K. S. Stephen Tam and Andrew Scanlon

745 **Statistical methods for in-place strength predictions by the pullout test,** by William C. Stone, Nicholas J. Carino, and Charles P. Reeve

757 **Cyclically loaded concrete beams with web openings,** by Richard B. Pool and Rogerio Lopes

764 **Sensitivity study of reinforced concrete simple beams,** by Robert E. Abendroth and Charles G. Salmon

772 **Stresses in prestressed and nonprestressed pavement and slabs on grade due to differential shrinkage and creep,** by Michel Sargious and Amin Ghali

777 **Lightly reinforced concrete beams under cyclic load,** by Charles K. Nmai and David Darwin

784 **Crack width of partially prestressed concrete members,** by K. M. Suri and W. H. Dilger

798 **Guide for the use of polymers in concrete,** by ACI Committee 548

830 **Guide for cast-in-place low-density concrete,** by ACI Committee 523

838 **Analysis and design of reinforced concrete guideway structures,** by ACI Committee 358

882 **Abstracts**
Concrete in transportation, SP-93

November-December 1986 JOURNAL

899 **Long-time multipliers for estimating two-way slab deflections,** by Cameron J. Graham and Andrew Scanlon

909 **Experimental analysis of limit states in a six-panel waffle flat-plate structure,** by Andrzej B. Ajdukiewicz and Alina T. Kliszczewicz

916 **Tests on reinforced concrete slabs designed by direct design procedure,** by Abdel Wahid Hago and Prabhakara Bhatt

925 **A rational approach to shear design—The 1984 Canadian Code provisions,** by Michael P. Collins and Denis Mitchell

934 **Fiber reinforced beams in torsion,** by R. John Craig, James A. Parr, Eddy Germain, Victor Mosquera, and Stavros Kamilares

943 **Determination of the air-void system parameters in hardened concrete—An error analysis,** by B. W. Langan and M. A. Ward

953 **Postcure forming of ferrocement,** by Douglas Alexander and Robert C. K. Alexander

961 **Aggregates, elastic-modulus, and Poisson's ratio of concrete,** by Sami A. Klink

966 **Reinforcement buckling in reinforced concrete flexural members,** by Charles F. Scribner

974 **Direct measurement of slip between steel and concrete,** by Brant J. Lahnert, Jules Houde, and Kurt H. Gerstle

983 **Crushed concrete fines recycled for soil modification purposes,** by Torben C. Hansen and Jørgen W. Angelo

988 **Interactive design of reinforced concrete columns with biaxial bending,** by David A. Ross and J. Richard Yen

994 **Effect of fly ash composition on sulfate resistance of cement,** by P. K. Mehta

1001 **Thermal stresses and cracking of concrete bridges,** by Mamdouh Elbadry and Amin Ghali

1010 **Mat design,** by Joseph E. Bowles

1018 **Axial behavior of reinforced concrete columns under dynamic loads,** by Parviz Soroushian and Jongsung Sim

1026 **Behavior of beams with shear span-to-depth ratios greater than 2.5,** by Michael D. Kotsovos

1035 **Bond of reinforcement to revibrated concrete,** by Wisam A. K. Altowaiji, David Darwin, and Rex C. Donahey

1043 **Proposed standard specification for cold weather concreting (ACI 306.1),** by ACI Committee 306

1053 **Abstracts**
Properties of concrete at early ages, SP-95

1065 **Index to Proceedings V. 83**